

Aquatic Habitat and Living Resources of the Sparrows Point Region

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Liquefied Natural Gas Task Force

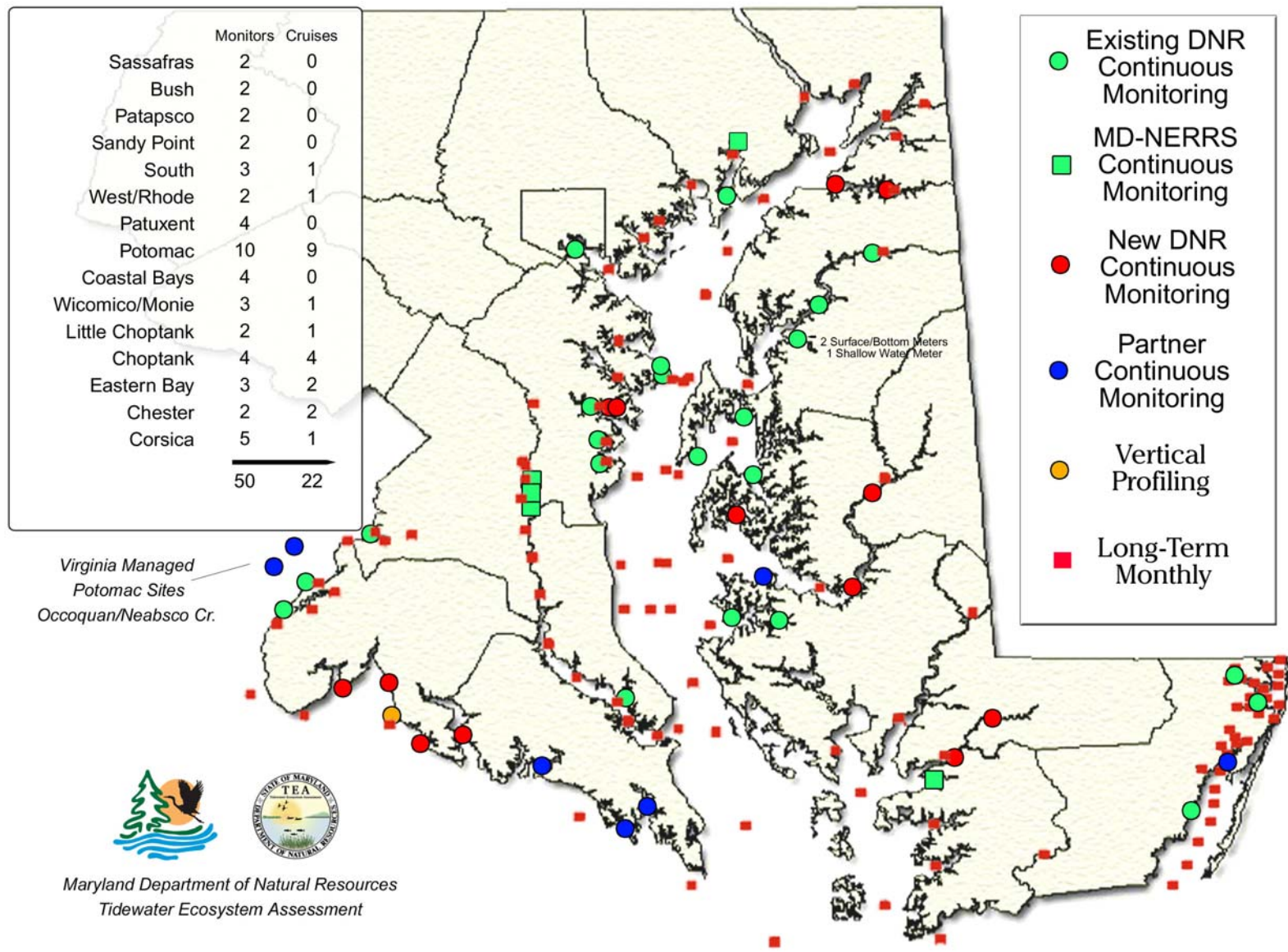


**Liquefied Natural Gas Task Force
November 1, 2006**








Aquatic Habitat and Living Resources of the Sparrows Point Region

- **Water Quality**
- **Phytoplankton**
- **Submerged Aquatic Vegetation (SAV)**
 - **Fisheries Habitat**
 - **Benthos**

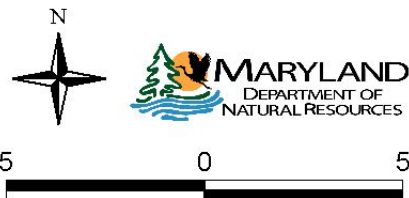
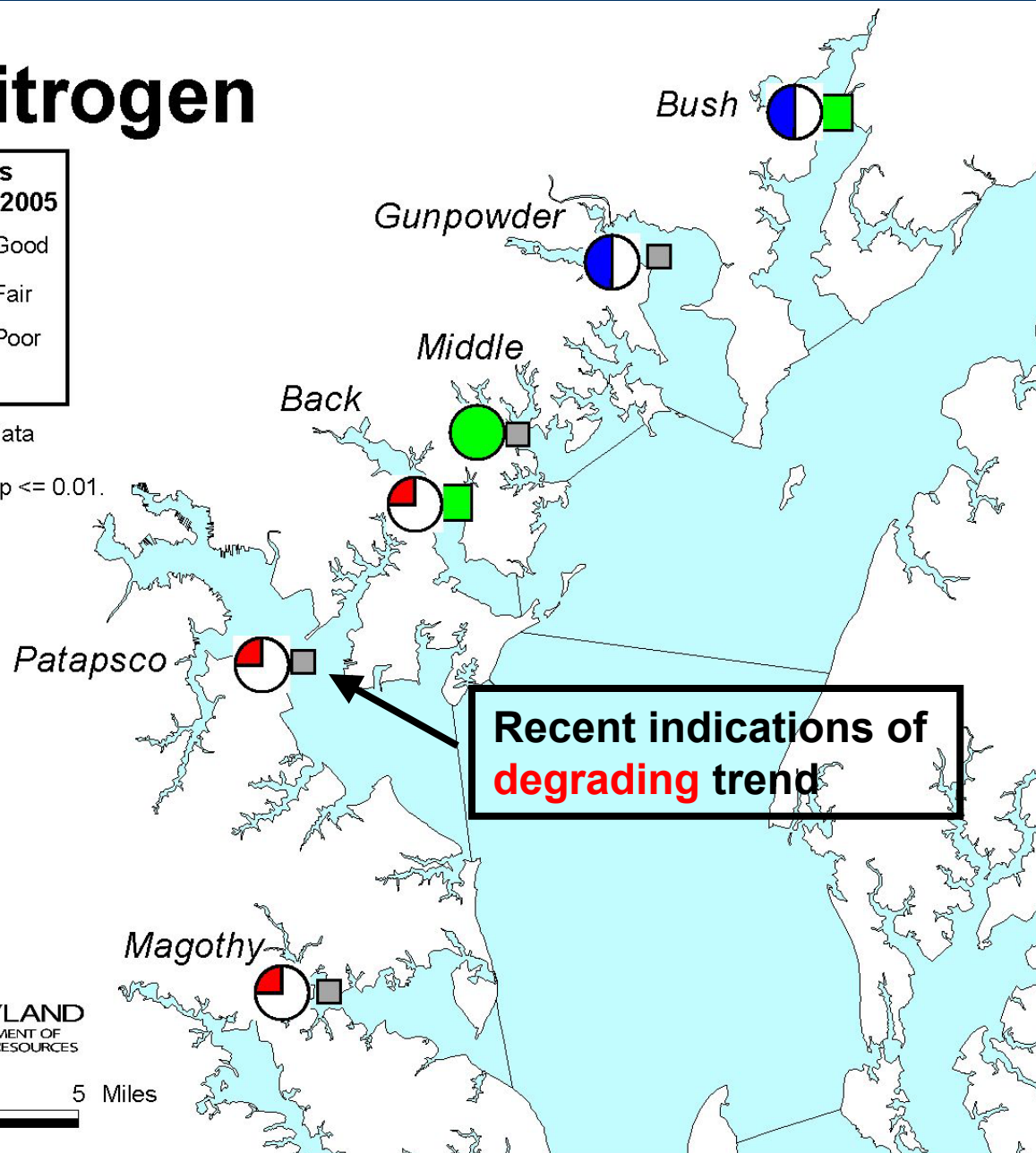
Maryland DNR - 2006 Tidal Monitoring Sites










Total Nitrogen

Trend 1995-2005	Status 2003-2005
 Improving	 Good
 Degrading	 Fair
 No trend	 Poor
 Not available	

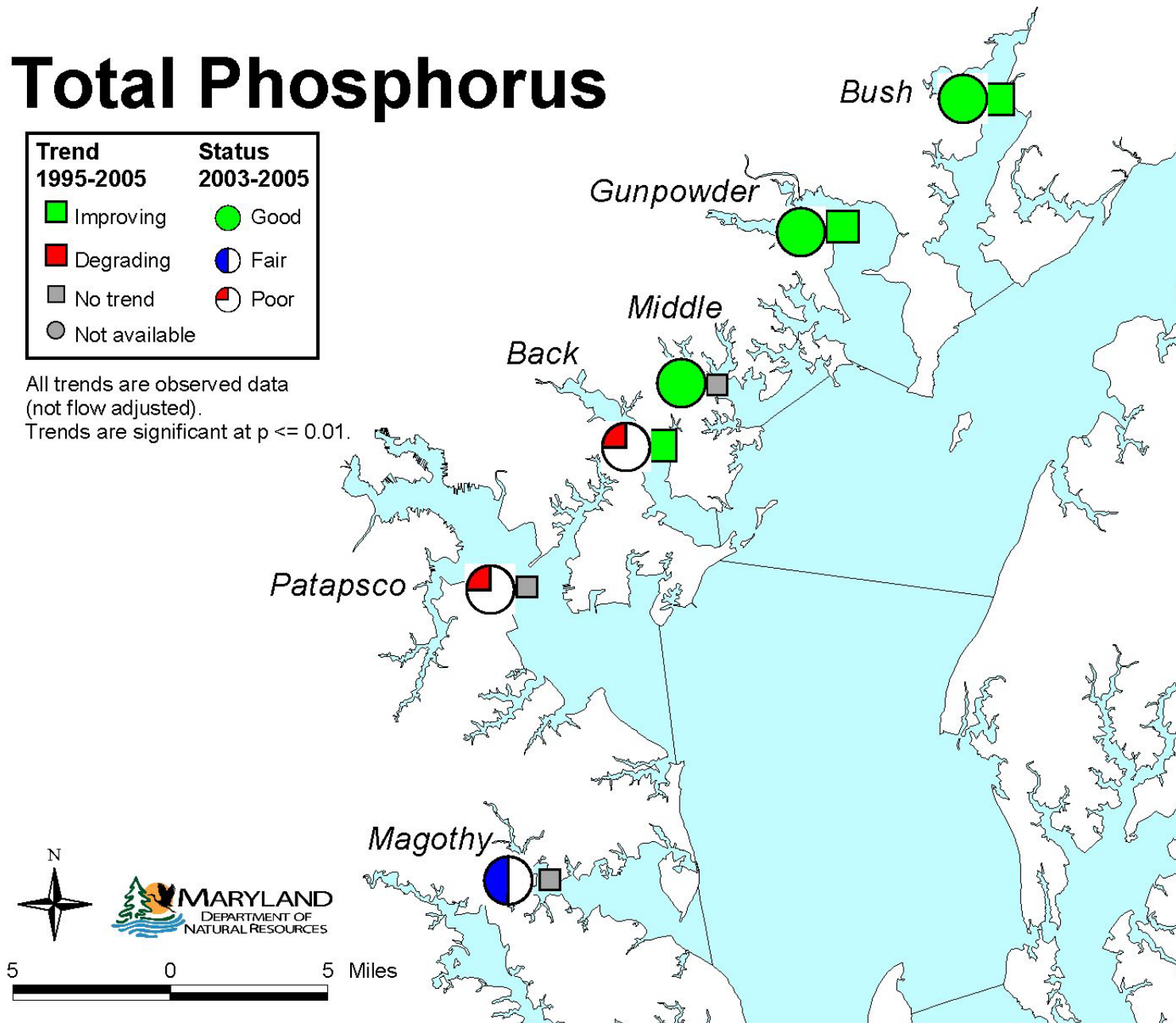
All trends are observed data
(not flow adjusted).
Trends are significant at $p \leq 0.01$.










Total Phosphorus

Trend 1995-2005	Status 2003-2005
 Improving	 Good
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 No trend	 Poor
 Not available	

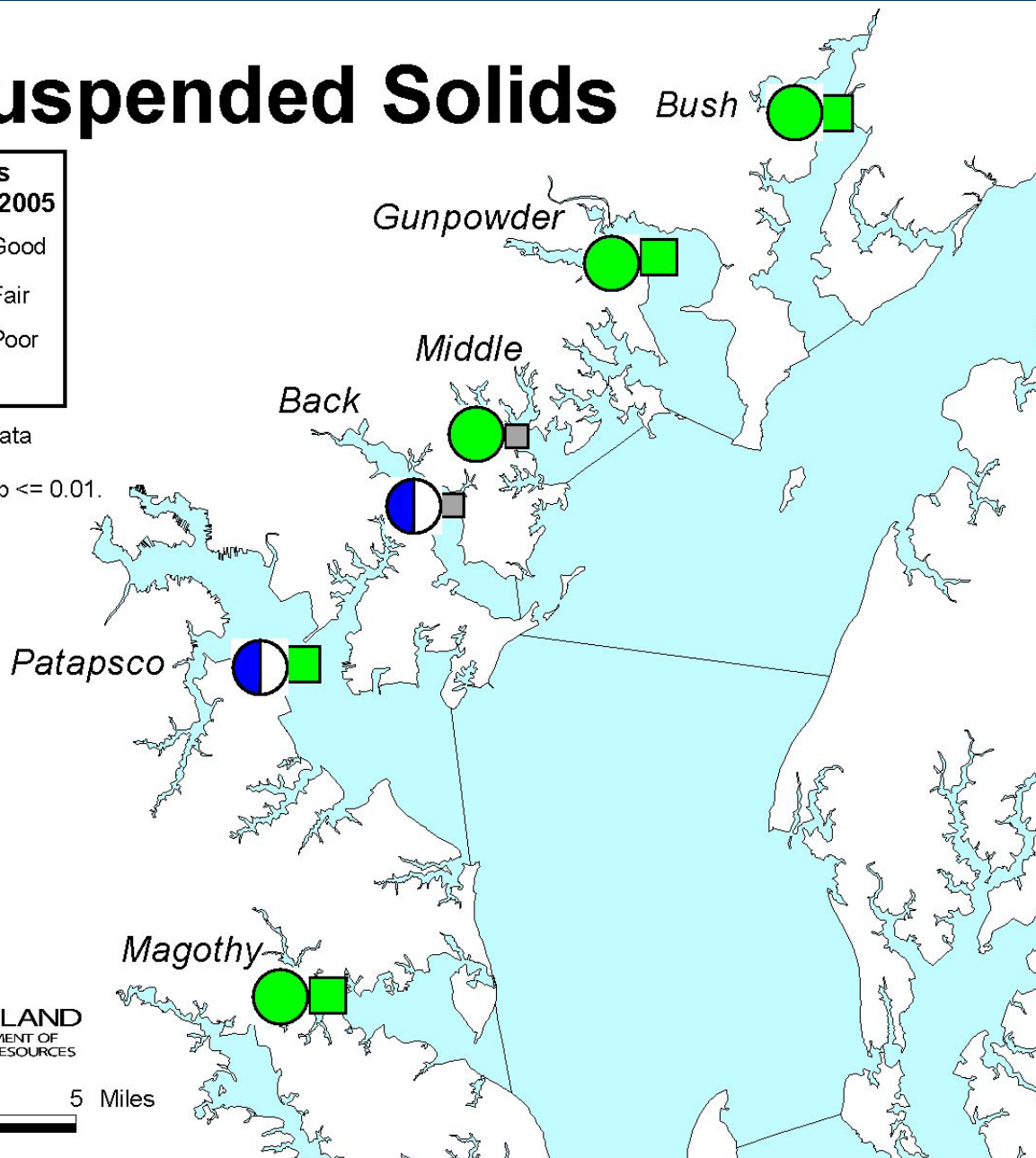
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Total Suspended Solids








Trend 1995-2005	Status 2003-2005
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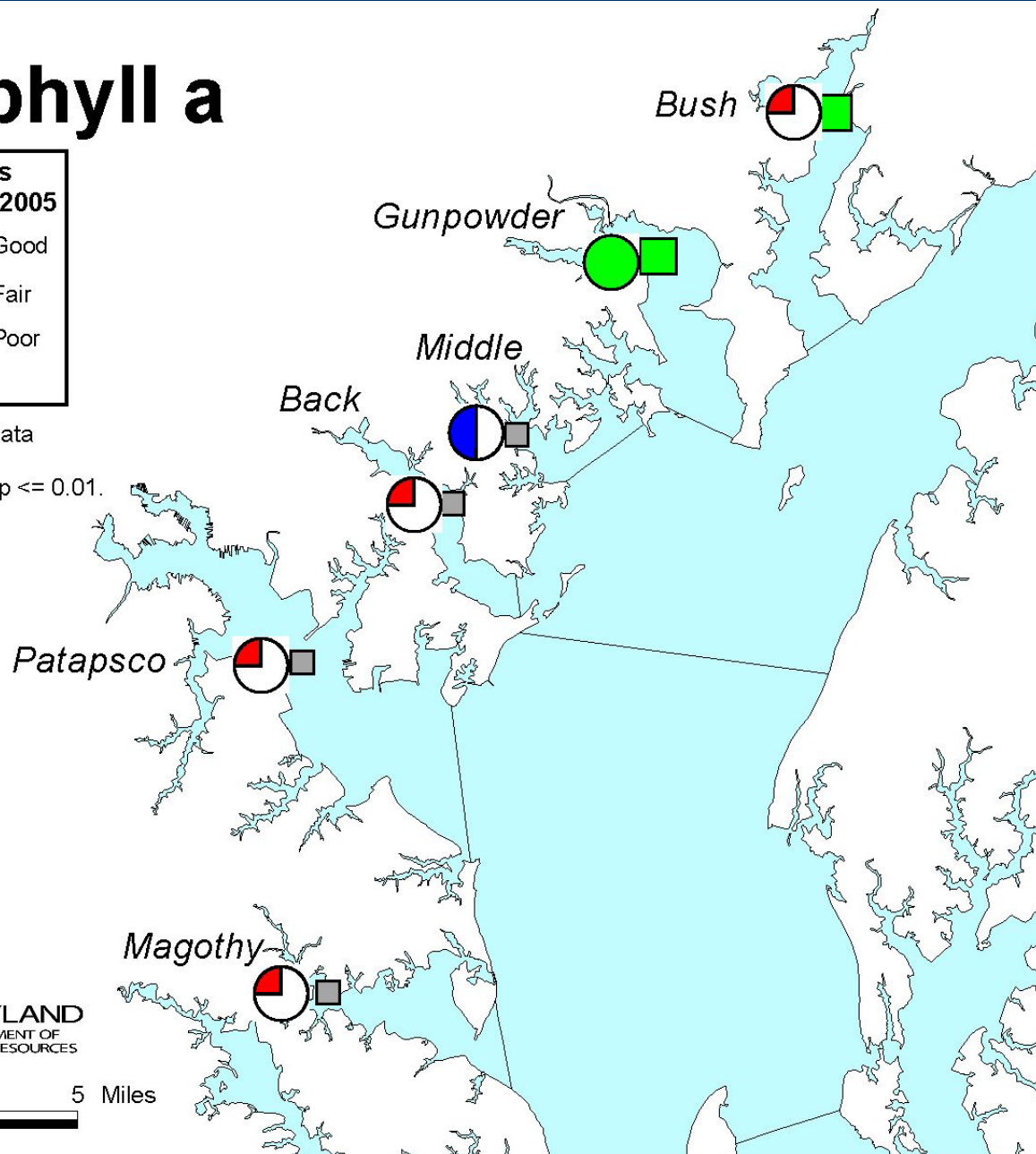


5 0 5 Miles

Chlorophyll a

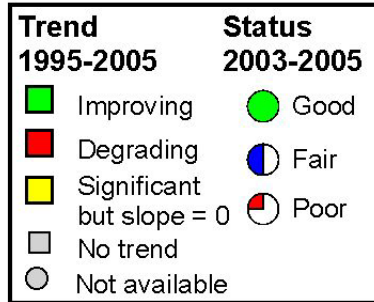
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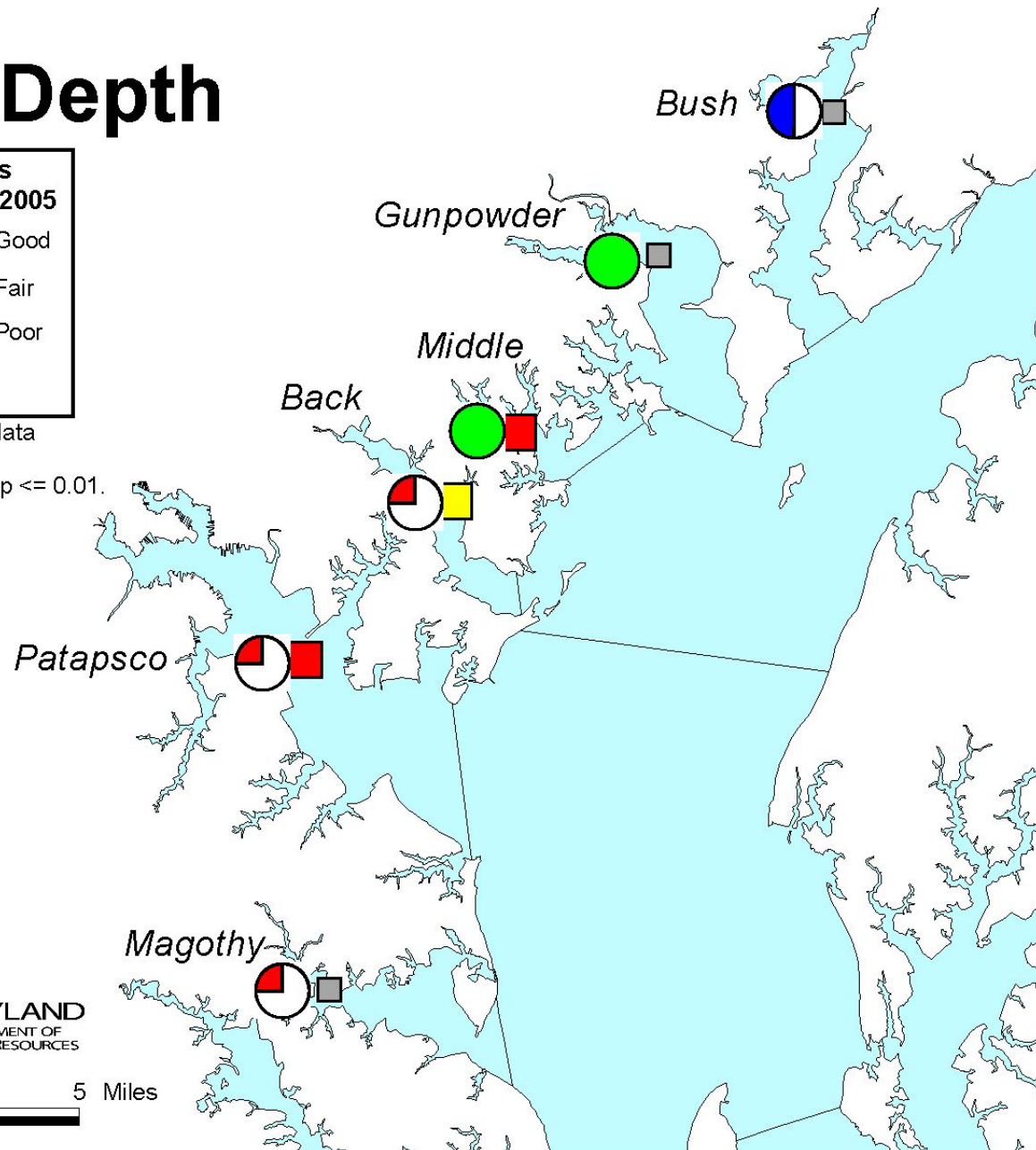
5 0 5 Miles

Secchi Depth










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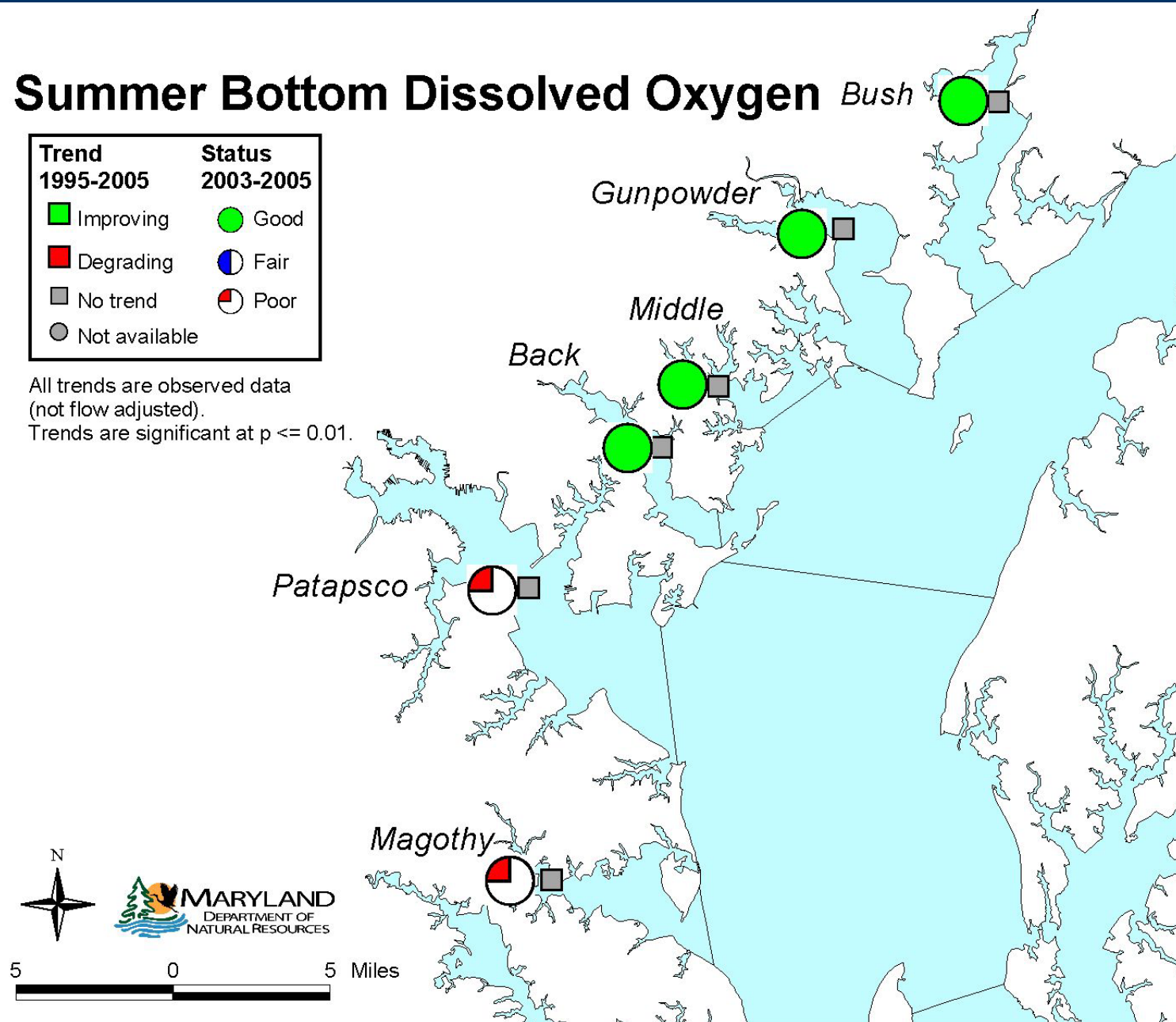
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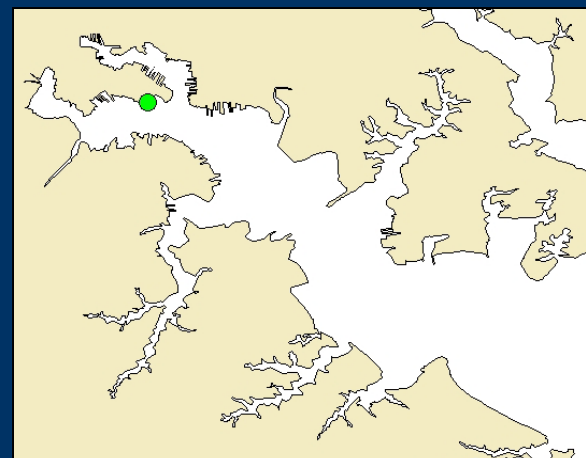
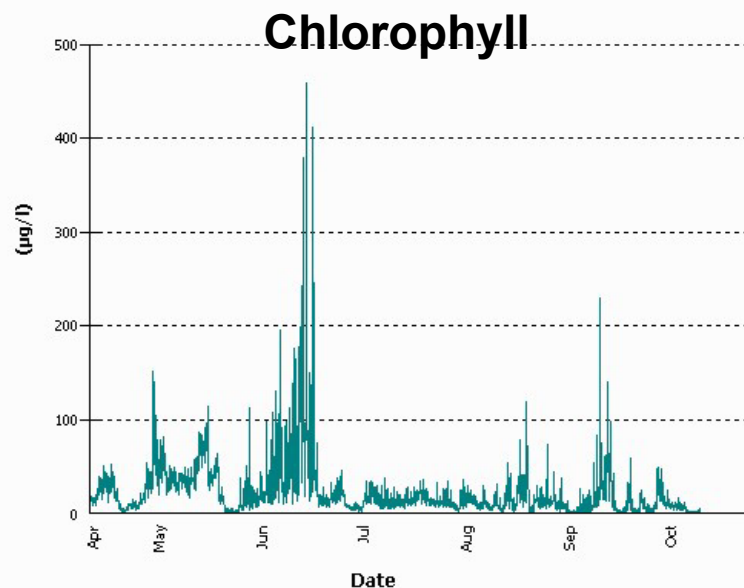


Summer Bottom Dissolved Oxygen

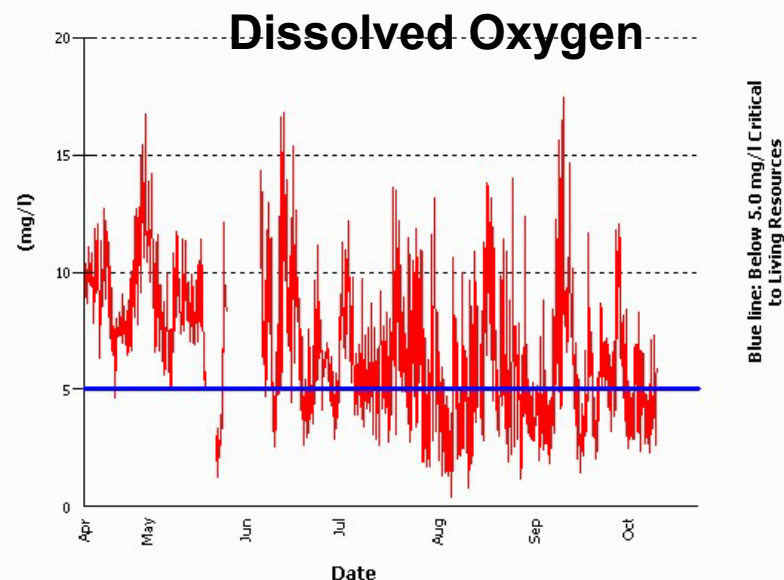
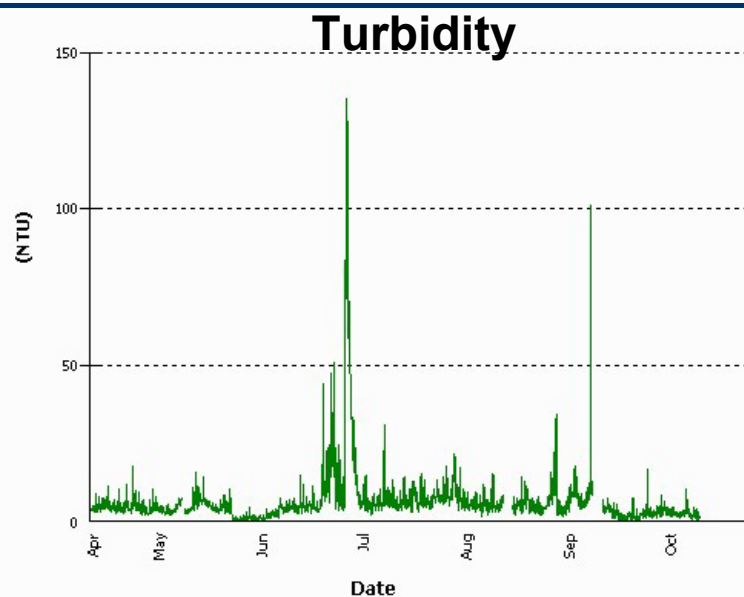
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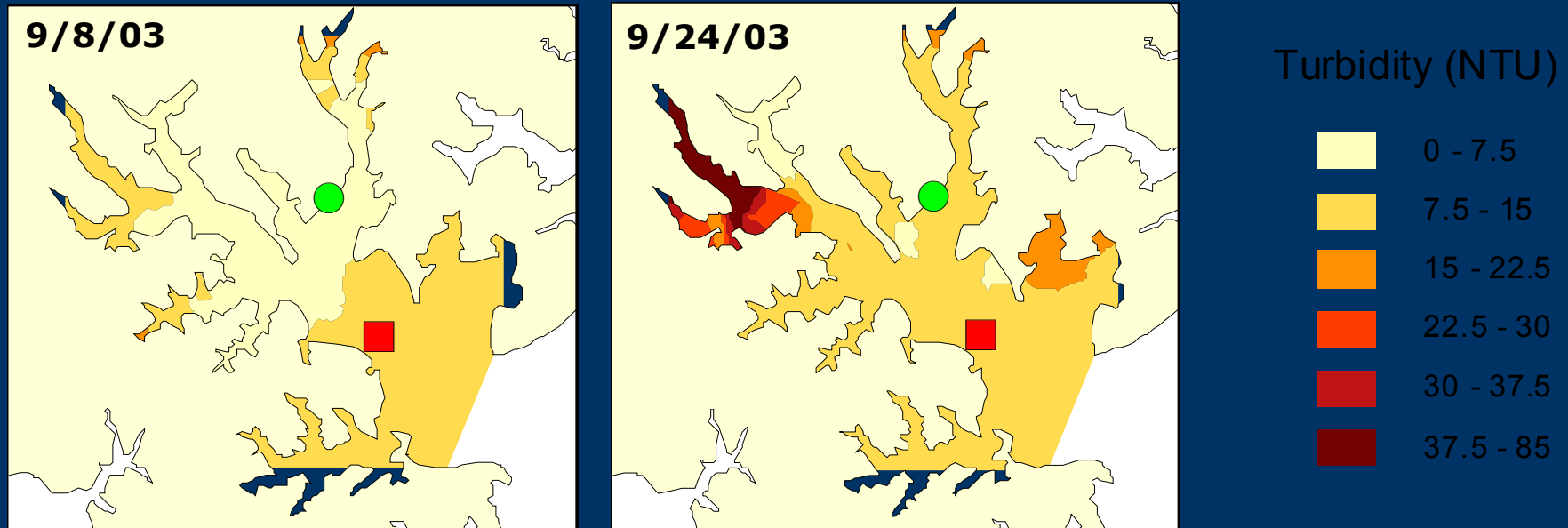




Fort McHenry/Patapsco R.
Continuous Monitoring Site



Water Quality Mapping / Continuous



Phytoplankton Index of Biotic Integrity (PIBI)

Key Bridge Site:

Fair - Good

Spring 1985 – 2005 Trend = Degrading

Summer 1985 – 2005 Trend = Degrading

Fair

Fair - Bad

← Spring 2003 - 2005

← Spring 2005

← Summer 2005

Bad

← Summer 2003 - 2005

2005 Aerial Survey (VIMS)

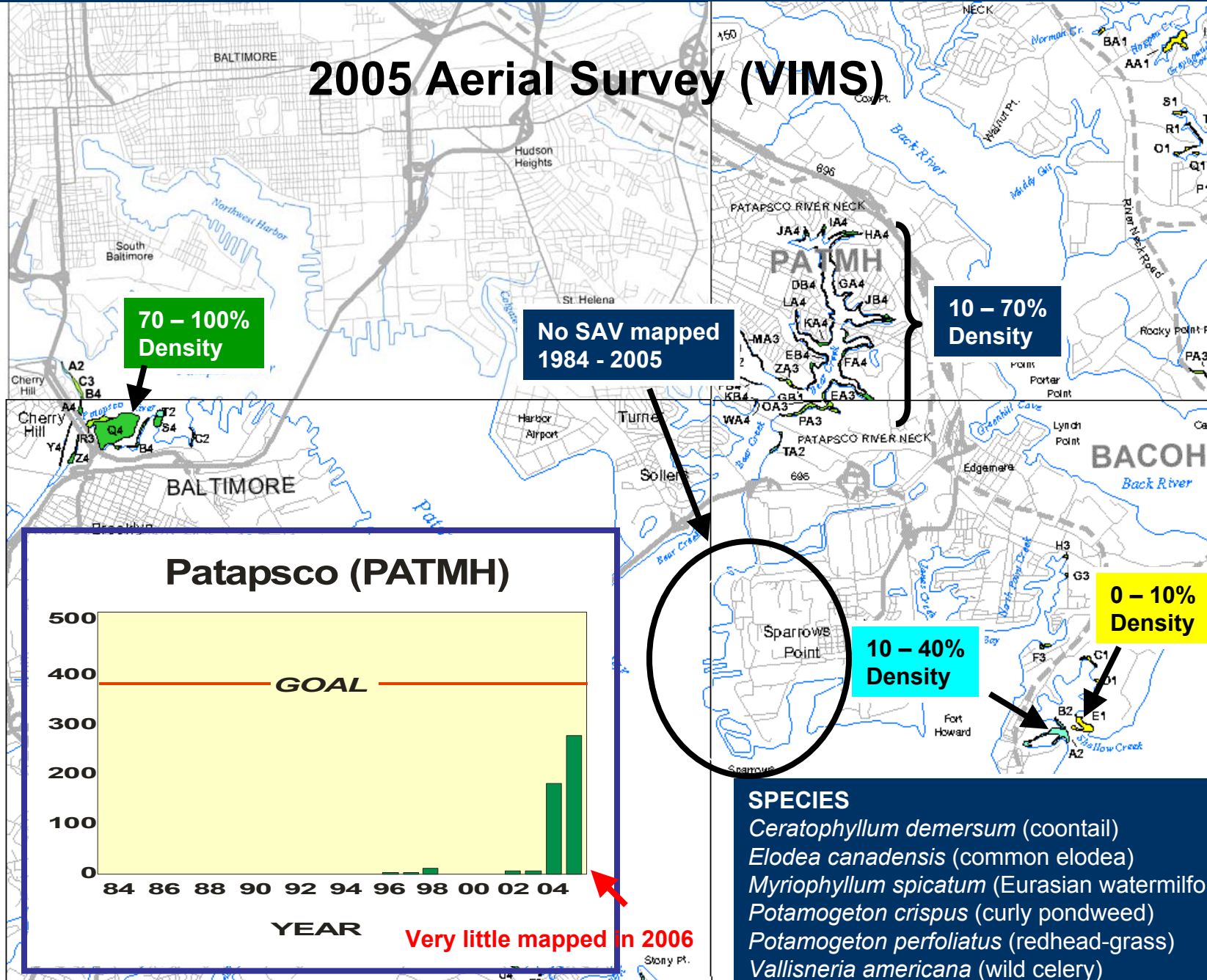


Figure 6. Upper Bay Yellow Perch Spawning Areas.

Data from 1970's and 1980's

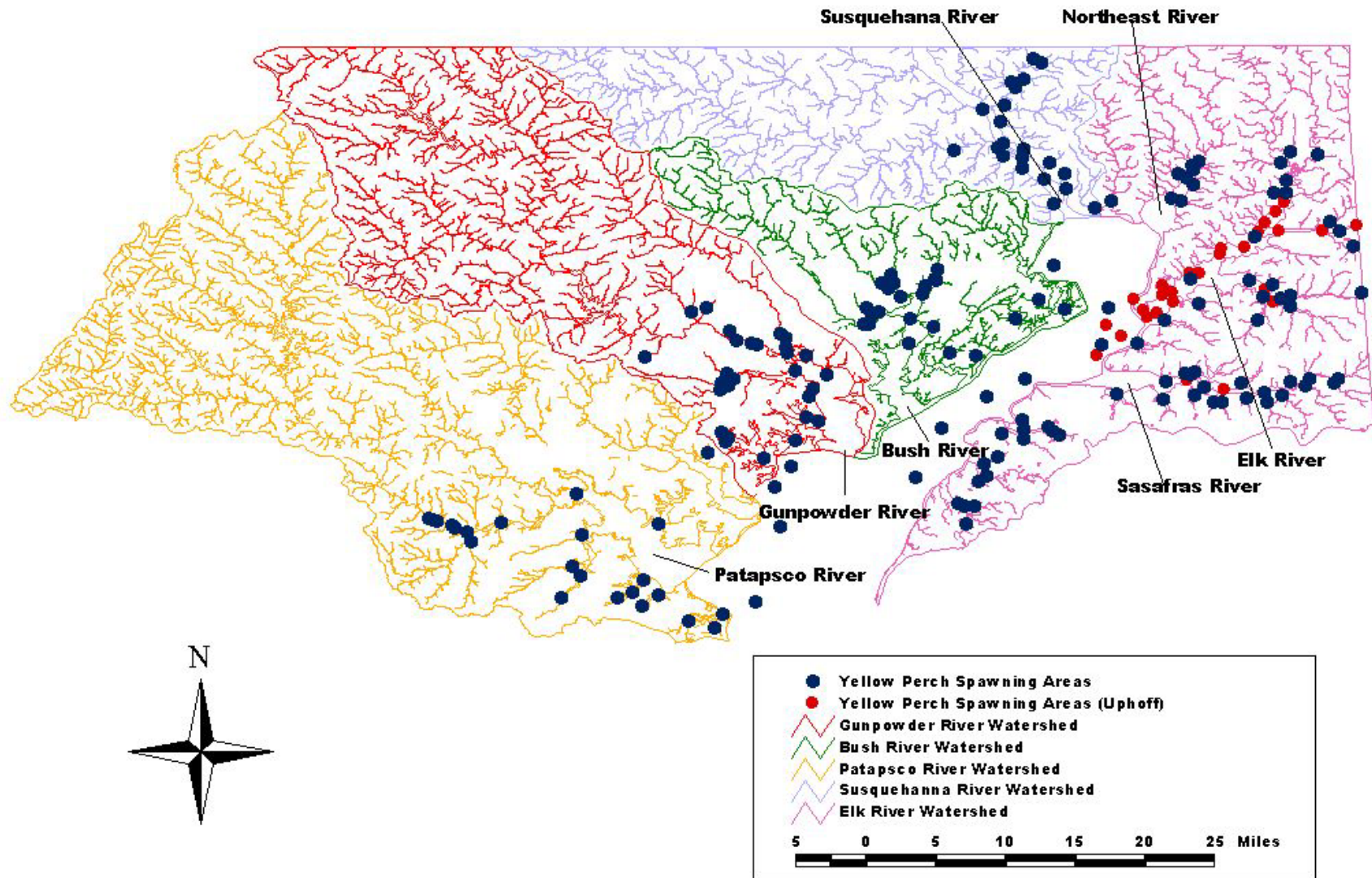


Figure 7. Upper Bay Alosid Spawning Areas.

Data from 1970's and 1980's

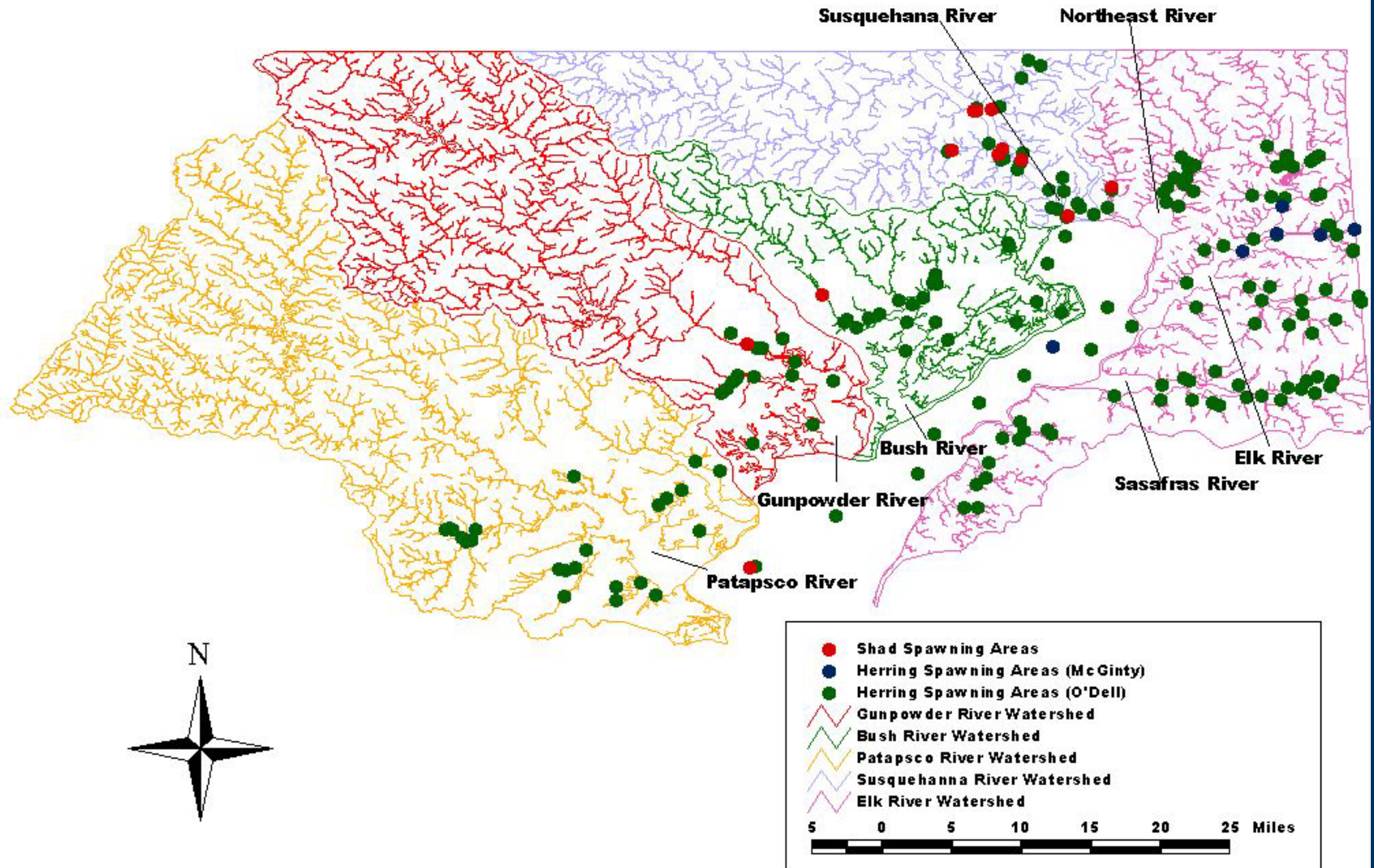
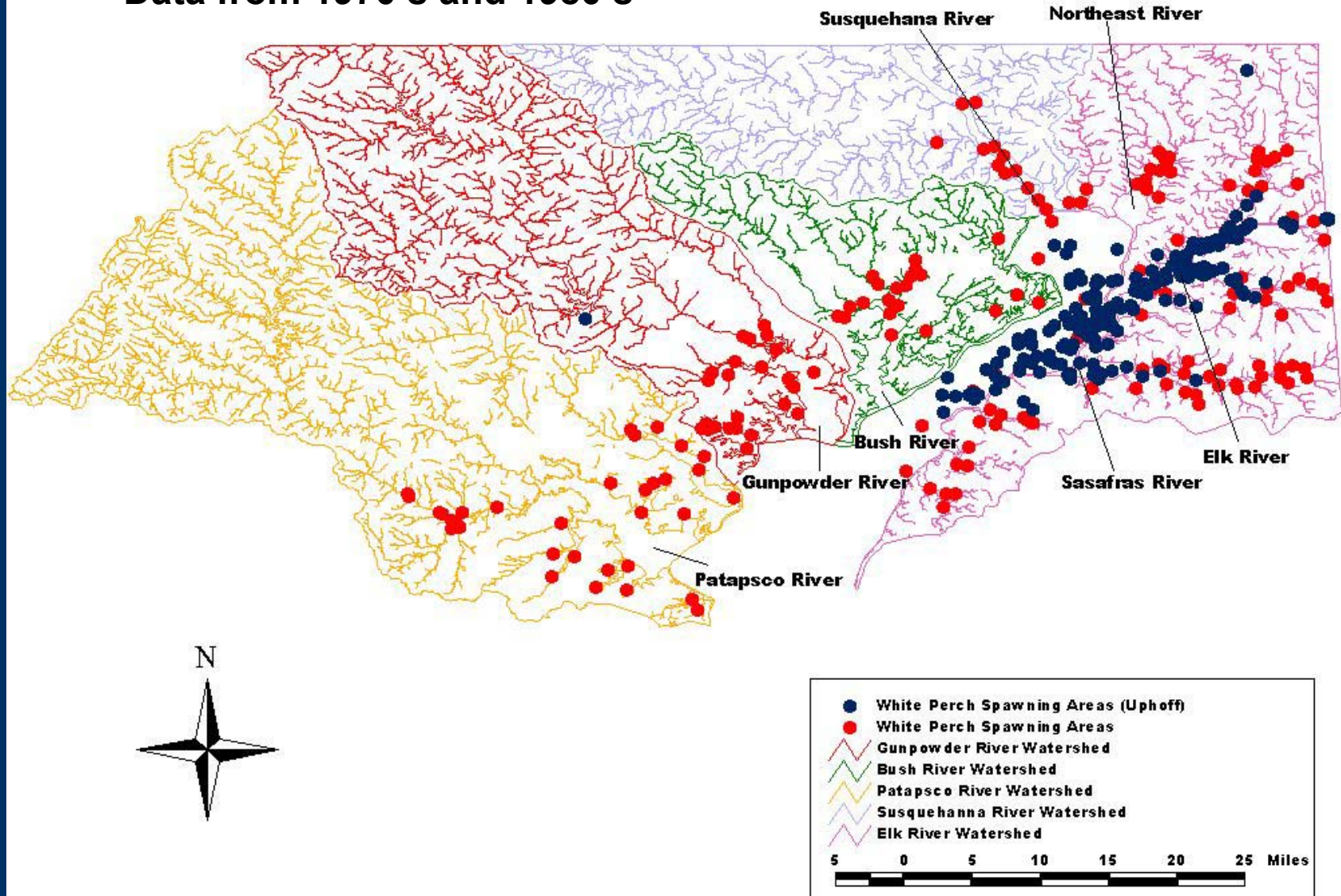


Figure 8. Upper Bay White Perch Spawning Areas.
Data from 1970's and 1980's



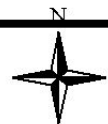
Benthic Index of Biotic Integrity (BIBI) 2003-2005

Random Sites Only

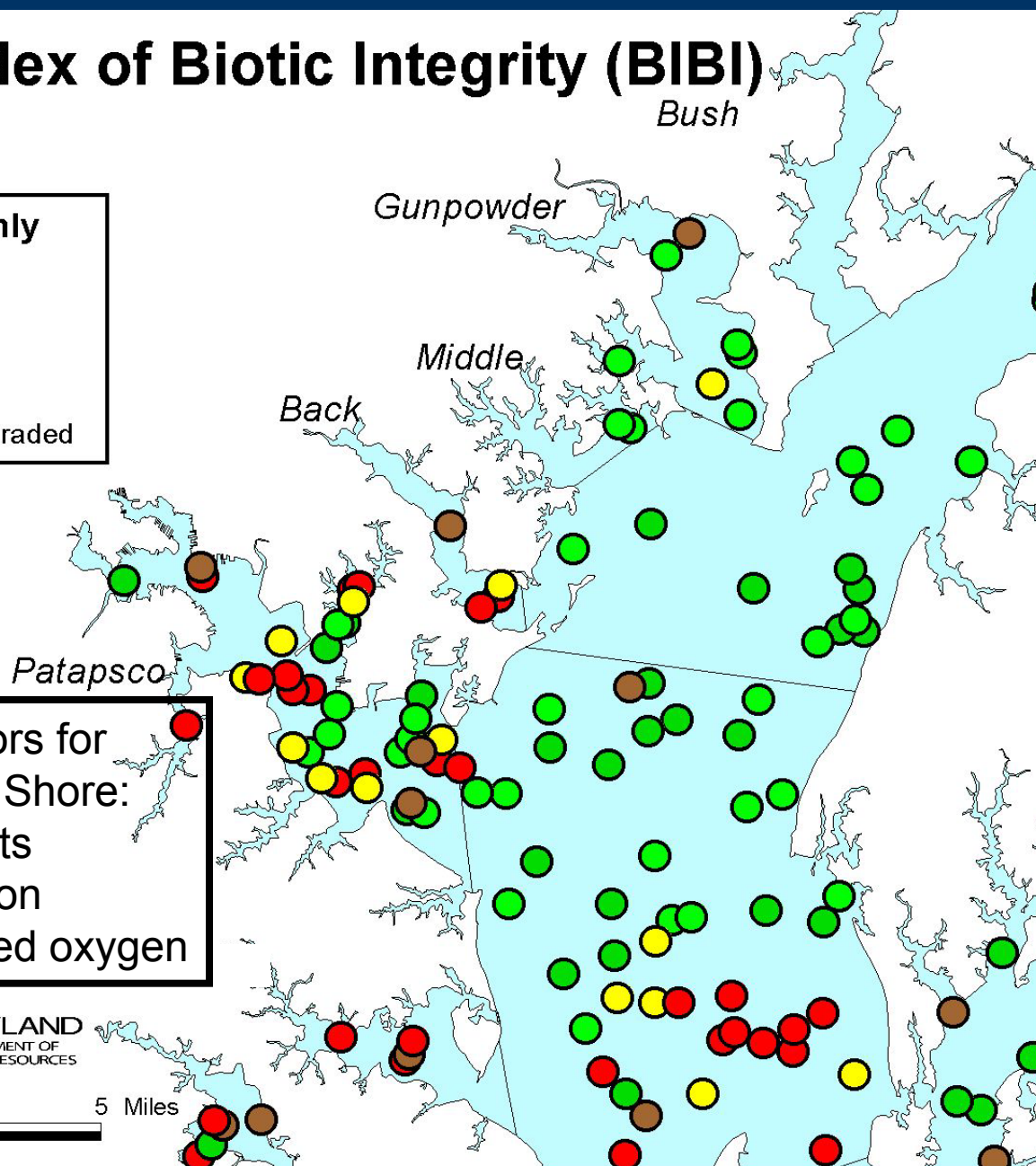
- Meets Goal
- Marginal
- Degraded
- Severely Degraded

Primary Stressors for Upper Western Shore:

- Contaminants
- Eutrophication
- Low dissolved oxygen



5 0 5 Miles



Benthic Index of Biotic Integrity (BIBI) 2003-2005

Average BIBI -Fixed sites 2003-2005

- ▲ Meets Goal
- ▲ Marginal
- ▲ Degraded
- ▲ Severely Degraded

Trend 1995-2005

- Improving
- Degrading
- No trend

All trends are observed data
(not flow adjusted).
Trends are significant at $p \leq 0.01$.



Water Quality:

- Key parameters are generally relatively “Poor” with no improving nor degrading trends 1995 – 2005.
- Spatially and temporally robust monitoring is necessary to adequately characterize estuaries such as the Patapsco River.

Phytoplankton:

- Phytoplankton community in the Sparrows Point area is currently rated as “Bad” or “Fair – Bad”.
- Phytoplankton community has demonstrated degrading health 1985 – 2005.

Submerged Aquatic Vegetation:

- No SAV has been mapped in the waters adjacent to Sparrows Point 1984 - 2005.
- There have been significant increases in SAV populations in Bear Creek, Shallow Creek, and Cherry Hill in 2004 and 2005.

Fisheries Habitat:

- There is little fish population data available specific to the Sparrows Point area.
- Sparrows Point and Bear Creek were identified as spawning areas for yellow perch, herring, and white perch in the 1970’s and 1980’s.

Benthos:

- Long-term reference sites near Sparrows Point are currently rated as “Degraded” or “Severely Degraded”.
- There have been no significant trends in benthic health 1995 - 2005.